LOUISIANA DEPARTMENT OF WILDLIFE & FISHERIES

OFFICE OF FISHERIES
INLAND FISHERIES SECTION

PART VI -B

WATERBODY MANAGEMENT PLAN SERIES

SIBLEY LAKE

WATERBODY EVALUATION &
RECOMMENDATIONS

CHRONOLOGY

June 2014 - Prepared by
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WATERBODY EVALUATION

STRATEGY STATEMENT

Recreational
Sportfish species are managed to provide a sustainable population while providing anglers the opportunity to catch or harvest numbers of fish adequate to maintain angler interest and efforts.

Commercial
Sibley Lake does not support significant numbers of fish species that normally comprise a commercial fishery. Catfish, spotted gar, freshwater drum and bowfin are present in the lake and are managed to provide sustainable populations.

Species of Special Concern
No species of special concern are known to occur in this lake.

EXISTING REGULATIONS

Recreational Fishing Regulations
Statewide recreational fishing regulations are in effect at Sibley Lake. Recreational fishing regulations may be viewed at the link below:
http://www.wlf.louisiana.gov/fishing/regulations

In addition to statewide LDWF regulations, The City of Natchitoches has passed ordinances establishing special fishing regulations for Sibley Lake to include the following:

Sec. 22-56. Fishing rules.
The following rules shall be in force governing fishing on Sibley Lake, to-wit:

(1) All state laws and regulations shall be enforced.

(2) No person will be allowed to seine in the waters of the lake. Fish traps and nets are prohibited.

(3) No commercial fishing will be permitted on Sibley Lake except when recommended by the Louisiana Wildlife and Fisheries to eradicate trash fish. In such event, commercial fishermen must be approved and must obtain a written permit from the Sibley Lake custodian.

(4) Fishing will be permitted in all areas of the lake except Area Three, which is off-limits, being the area around the water intake structure and the spillway.

(5) Use of unsanitary catfish bait or other unsanitary baits is prohibited.

(6) Trot lines will be permitted under the following rules and regulations, to wit:

(a) No trot lines will be permitted in ski areas from May 1 to October 1 of each year.

(b) Trot lines shall not exceed one hundred fifty (150) feet in length and no line shall contain more than fifty (50) hooks; one individual may have more than one line but will be limited to a total of seventy-five (75) hooks; each line must have one floating device bearing the name and address of owner.

(c) Any trot lines not meeting the above requirements, in any respect, will be confiscated by the lake custodian without notice.

(d) Any unattended trot lines, yo-yos, or other similar devices are to be confiscated by the lake custodian, and no such lines, or other lines or any type, are to be extended horizontally in such a manner that any such line will be above the water line of the lake.

(Ord. No. 854, § 5, 6-8-64; Ord. No. 895, 7-11-66; Ord. No. 1018, 4-24-72; Ord. No. 46-1981, § A, 12-28-81)

These and other special regulations may be viewed at:
https://library.municode.com/index.aspx?clientId=11202

Commercial Fishing Regulations
Statewide commercial fishing regulations are in effect at Sibley Lake. Louisiana's commercial fishing regulations may be viewed at the link below:
http://www.wlf.louisiana.gov/fishing/regulations

SPECIES EVALUATION

Recreational Species

Largemouth Bass

Angler harvest and effort
A creel survey was initiated in February 1995 to determine angler effort and catch rates. This access point survey was conducted on four weekend days and two weekdays per month during the survey period.

The largemouth bass (LMB) fishery is an important component of Sibley Lake. Anglers logged 47,003 hours fishing on Cane River Lake in 1995 with 14,593 hours (31%) directed toward largemouth bass. Specific results derived from analysis of largemouth bass angler information data gathered during creel surveys are given in Tables 1 - 3.

Table 1. Largemouth bass angler information taken from a creel survey conducted at Sibley Lake, Natchitoches Parish, LA in 1995.

1995 Recreational Angler Survey – Sibley Lake	
NUMBER OF LARGEMOUTH BASS ANGLERS	3,580
MEAN NUMBER OF ANGLERS IN PARTY	1.34
MEAN TRIP LENGTH (HOURS)	3.72
MEAN ONE-WAY DISTANCE TRAVELED (MILES)	14.00

Table 2. Total estimates for largemouth bass catch data collected during a creel survey conducted at Sibley Lake, Natchitoches Parish, LA in 1995.

1995 (February-November) 10 fish creel limit.	
NUMBER LMB CAUGHT	11,422
NUMBER LMB HARVESTED	4,405 (38.6% of catch)
NUMBER LMB RELEASED	7,017 (61.4% of catch)
POUNDS LMB HARVESTED	3,764
AVERAGE WEIGHT PER LMB (POUNDS)	0.84
LMB CAUGHT PER TRIP	3.88
LMB HARVESTED PER TRIP	1.79
LMB CAUGHT PER HOUR	1.1
LMB HARVESTED PER HOUR	0.48

Size distribution for largemouth bass harvested by bass anglers during creel surveys conducted at Sibley Lake in 1995 are shown in Figure 1.

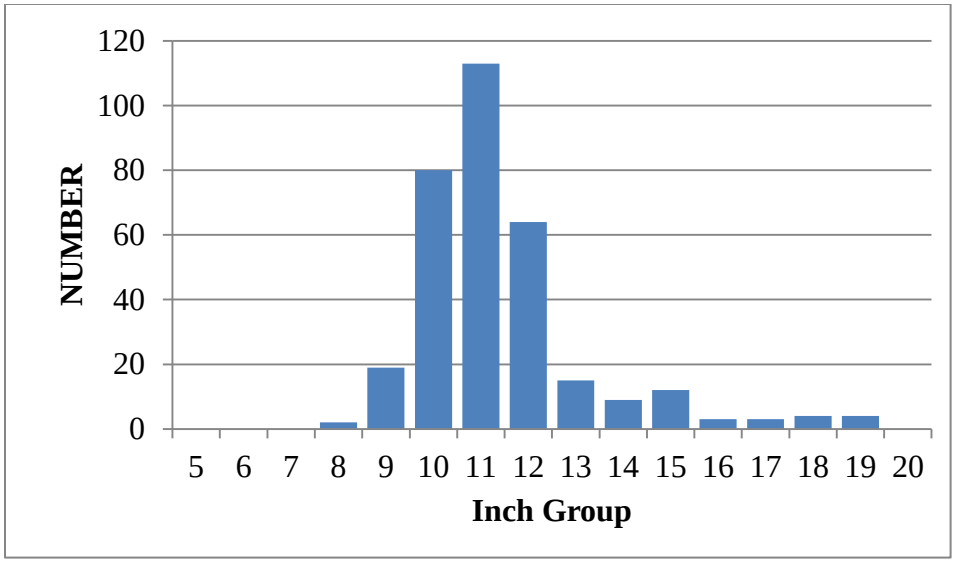

Figure 1. The size distributions (inch groups) of largemouth bass harvested by bass anglers during creel surveys at Sibley Lake, LA in 1995. n = 328

The 1995 creel data indicates that during the survey periods, bass anglers harvested approximately 38.6% (release rate of 61.4%) of all bass caught. The median length for largemouth bass harvested by bass anglers was 11 inches.

Relative abundance, size structure and relative weight-

Largemouth bass are utilized as an indicator species for the overall fish population due to their high position in the food chain. Electrofishing generally provides good insight into the abundance and size distribution of largemouth bass. However, electrofishing does not effectively sample large bass. Gill net sampling is used to determine the status of large bass and other large fish species.

Catch per unit effort (CPUE) is the term used to describe the number of fish collected during a given time period of sampling. For electrofishing samples, the standard CPUE time period is one hour and the unit of measure is number of fish captured. Analysis of electrofishing data from Sibley Lake indicates the presence of a stable bass population with adequate abundance to provide for a sustained fishery. The total CPUE value for spring electrofishing in 2013 was 110.6 bass per hour (Figure 2) which is 21% below the average value for the previous four sampling periods. However, the total CPUE value of 183 bass per hour for fall electrofishing in 2013 is 35% above the average of the previous four sampling periods.

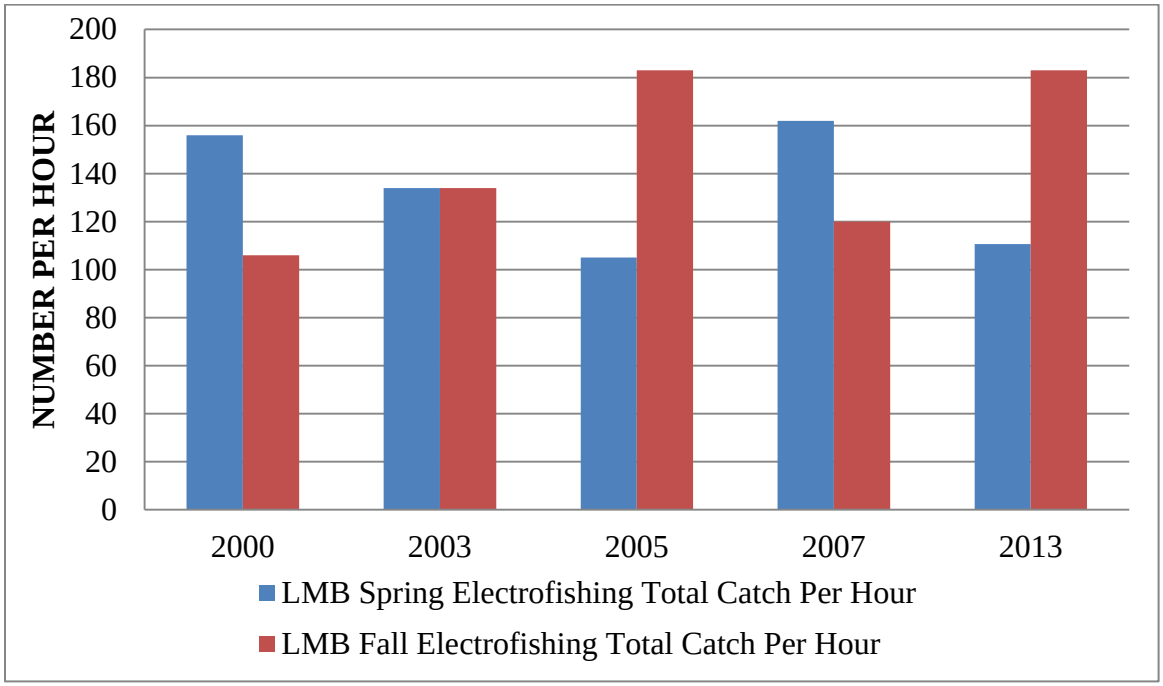

Figure 2. Total CPUE for largemouth bass collected during spring and fall electrofishing at Sibley Lake, LA in 2000, 2003, 2005, 2007 & 2013.

Stock and preferred-size classes demonstrate a stable abundance level in surveys conducted since 2000. Quality-size bass abundance in year 2013 was 35% below the average value for the previous four surveys. The CPUE values for selected largemouth bass size groups collected during spring electrofishing sampling are shown in Figure 3.

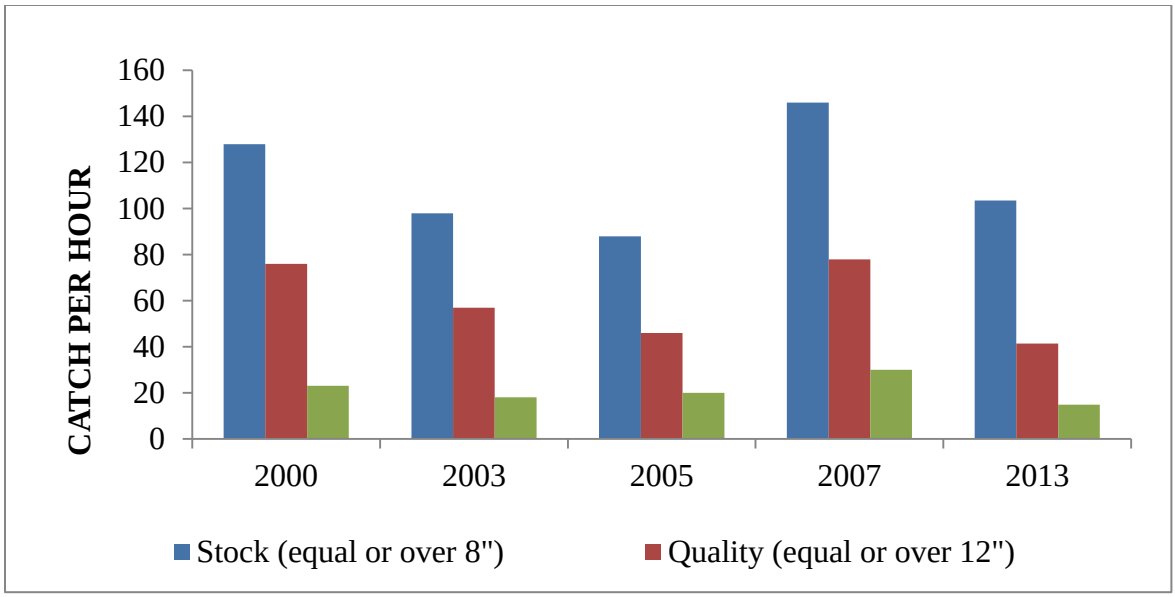

Figure 3. CPUE for largemouth bass of stock, quality and preferred size classes collected during spring electrofishing at Sibley Lake, LA in 2000, 2003, 2005, 2007, & 2013.

Average relative weights (Wr) for different size groups of largemouth bass sampled from Sibley Lake by fall electrofishing during the years 2000, 2003, 2005, 2007 and 2013 are stock-size – 90.7, quality-size – 93, preferred-size – 97.5 and memorable-size – 98.1. Relative weight results for selected largemouth bass are depicted in Figure 4.

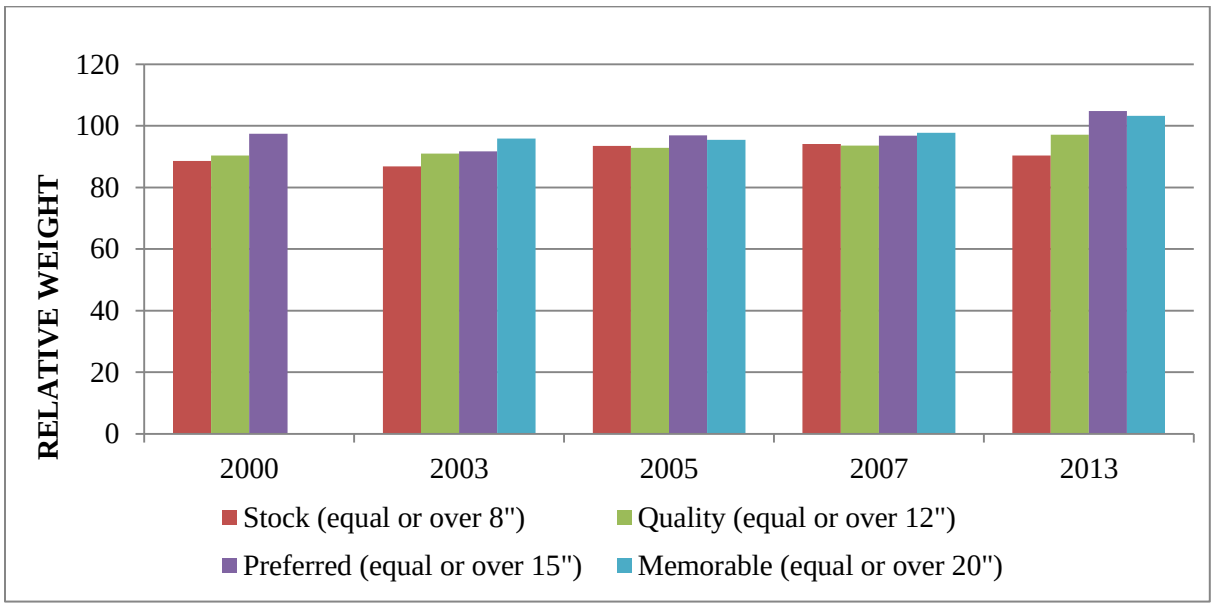

Figure 4. The relative weights of stock, quality, preferred and memorable size largemouth bass collected during fall electrofishing at Sibley Lake, LA in 2000, 2003, 2005, 2007 & 2013.

In comparing relative weights for largemouth bass collected in 2013 to earlier Wr values for that species, Wr for stock-size fish decreased by 0.4%, Wr for quality-size fish increased by 4.4%, and Wr for preferred-size fish increased by 7.5% when compared to the average of the previous four years.

The size distribution of largemouth bass from Sibley Lake for fall 2013 is presented in Figure 5. Size groups from 4 to 20 inches are represented in the sample, with 11 to 13 inch fish being very prevalent in the population. Young-of-the-year (YOY) bass from 4 to 8 inches total length (TL) comprised 39% of the population sample, indicating ample recruitment had occurred from the 2013 spring spawn.

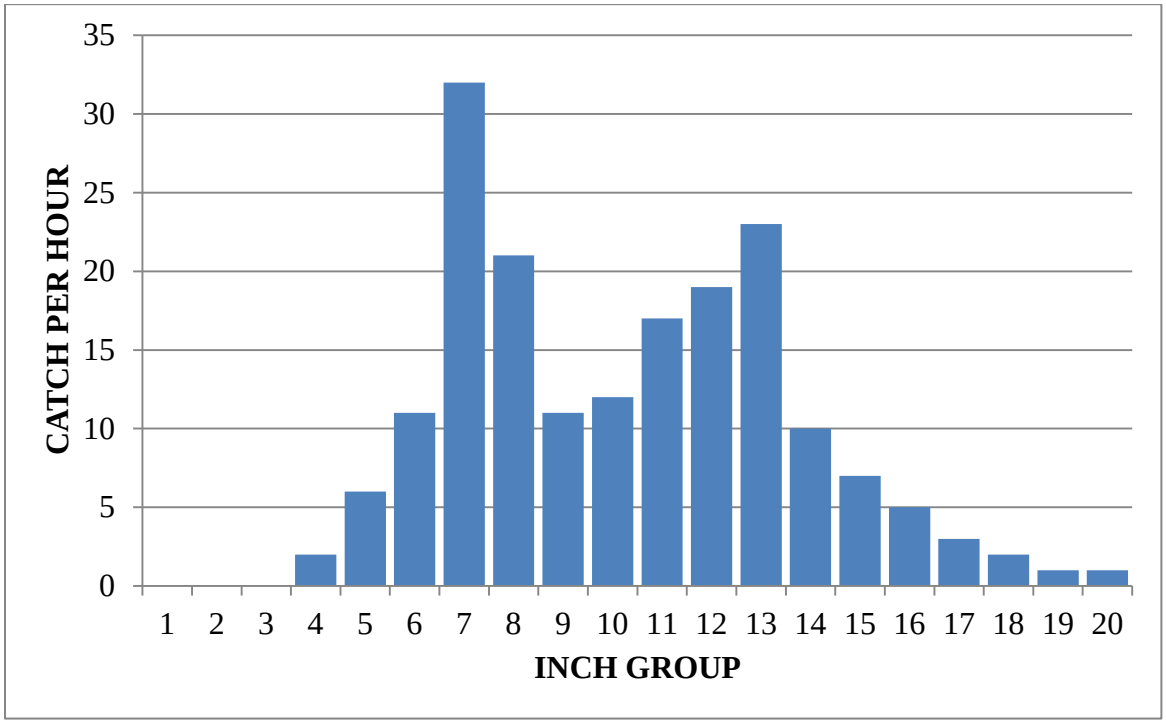

Figure 5. The size distribution (inch groups) of largemouth bass in Sibley Lake, Louisiana from fall electrofishing results for 2013 (n = 183).

Largemouth Bass Genetics

Sibley Lake was stocked with 67,874 Florida strain largemouth bass fingerlings in 1993. Florida strain largemouth bass were stocked into the reservoir to incorporate a genetic trait associated with larger maximum sized adult fish. Samples taken from electrofishing in year 2007 show that the percentage of bass with Florida influence (F - F_x) was 23.5 percent at that time. Sampling indicated that largemouth bass with the genetic signature defined as pure Florida comprised 7.5 percent in 2007. Genetic testing results for largemouth bass are shown in Table 3.

Table 3. Genetic analysis of largemouth bass taken from Sibley Lake, LA.

Year	Number	Northern	Florida	Hybrid	Florida Influence
2007	68	76.5%	7.5%	16%	23.5%

Sunfish (Bluegill & Redear)

Sunfish anglers comprise a small portion of the total angler group at Sibley Lake with their effort comprising 0.37% of the total angling effort during the latest creel survey period. Annual catch information for bluegill sunfish appears in Table 4.

Table 4. Bluegill catch data collected during annual creel surveys at Sibley Lake, Natchitoches Parish, Louisiana.

1995 (February-November)	
NUMBER BLUEGILL CAUGHT	506
NUMBER BLUEGILL HARVESTED	506 (100% of catch)
POUNDS BLUEGILL HARVESTED	94.2
AVERAGE WEIGHT PER BLUEGILL (POUNDS)	0.19
BLUEGILL CAUGHT PER TRIP	10.3
BLUEGILL CAUGHT PER HOUR	2.9
BLUEGILL HARVESTED (NUMBER PER HOUR)	2.9
BLUEGILL HARVESTED (POUNDS PER HOUR)	0.54

Crappie

Relative abundance and size structure indices-

Crappies are present in Sibley Lake and provide significant recreational opportunity for anglers. Hours of angling effort directed toward crappies were the largest component of angling effort during the latest creel survey period. In 1995, crappie anglers expended 54% of all angling effort on the lake. Crappies were sampled with leadnets seven times between 2002 and 2013. Total catch-per-unit-of-effort (number of fish caught per hour) values for those samples are given in Figure 6.

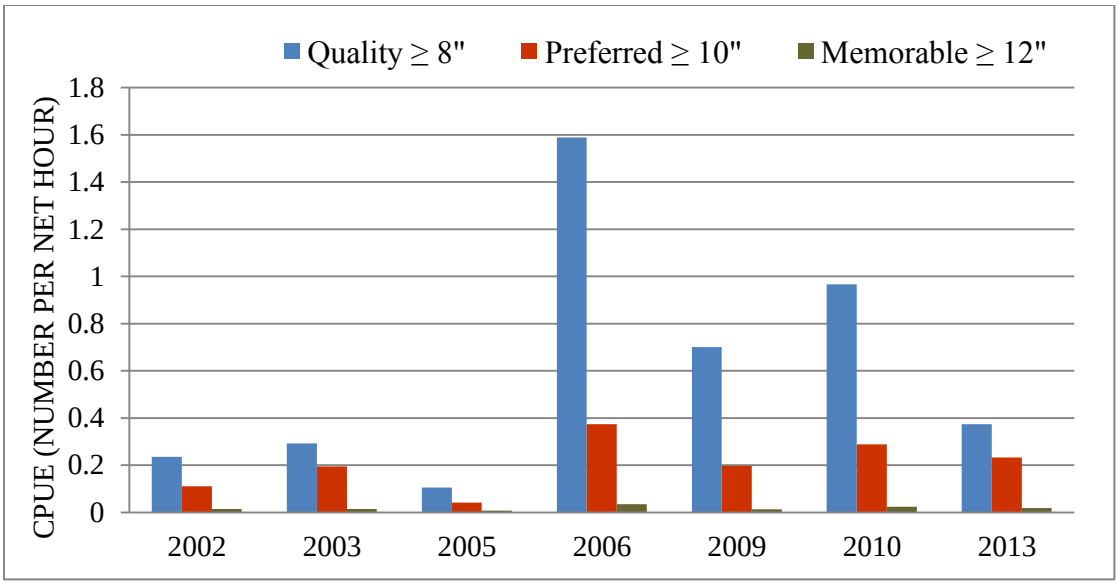

Figure 6. The CPUE (number caught per net hour) of white and black crappies captured in leadnets from Sibley Lake, LA in 2000, 2003, 2006, 2009, 2010 and 2013.

These results indicate the presence of a sustained population of crappie in this lake. They also indicate the cyclical pattern exhibited by crappies in waterbodies statewide.

Further understanding of the size distribution of this crappie population can be gained by looking at the relative stock density (RSD) values calculated for crappies collected with leadnets. RSD values for the three largest size groups of crappie are given in Figure 7.

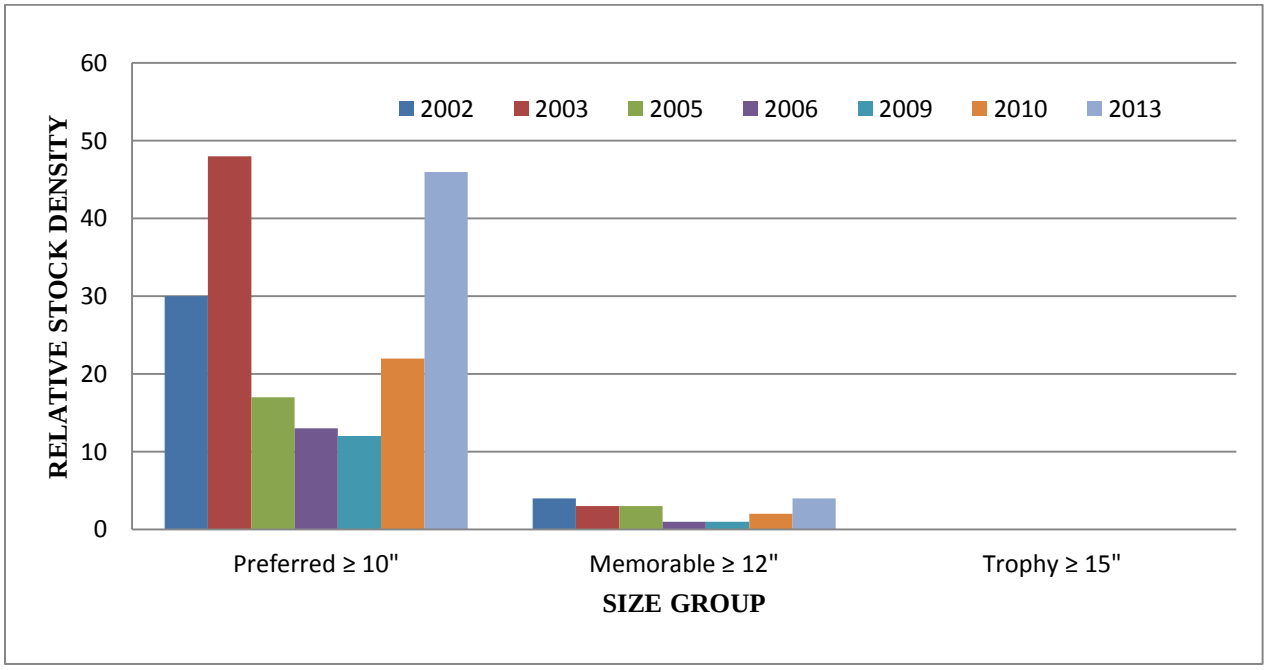

Figure 7. The relative stock density for preferred-, memorable- and trophy-sized crappie collected during lead net sampling at Sibley Lake, LA in 2002, 2003, 2005, 2006, 2009, 2010 & 2013.

The RSD of crappies suggests a significant portion of the crappie population is in the preferred-size group (TL > 10 in.). Memorable-sized fish are not considered abundant in this waterbody but are present in numbers sufficient to provide reasonable angler opportunity. The RSD of trophy-size crappies was zero, which is typical for this sampling method in most crappie populations. Relative stock density for preferred- and memorable-sized crappies was higher in 2013 than in the previous four sampling periods.

The size distribution of crappies (black and white combined) from Sibley Lake for fall 2013 leadnet results is presented in Figure 8. Size groups from 5 to 13 inches are present in the sample, with 9 and 10 inch fish being very prevalent in the population. Young-of-the-year (YOY) crappie 5 to 7 inches total length (TL) comprised 26% of the population sample, indicating moderate recruitment had occurred from the 2013 spring spawn.

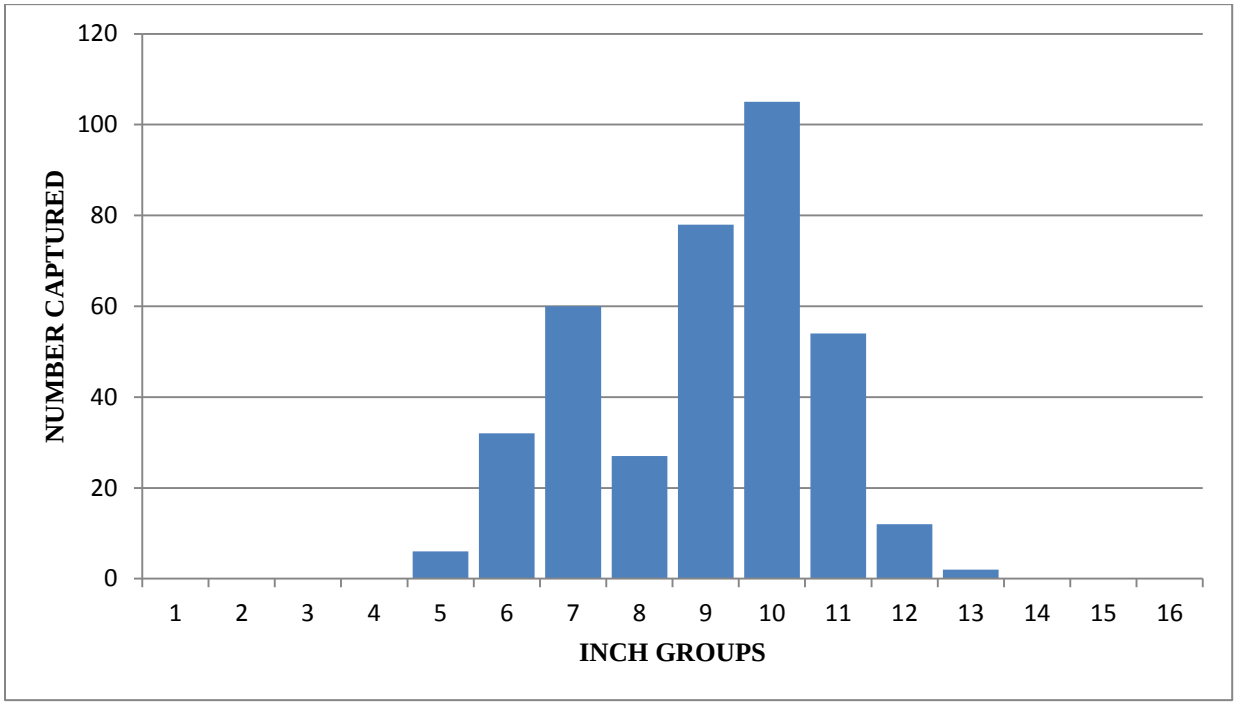

Figure 8. The size distribution (inch groups) of crappies (black and white combined) from Sibley Lake, Louisiana captured during leadnet sampling in the fall of 2013 (n = 376).

Angler harvest and effort

Crappie anglers were interviewed as part of the previously mentioned creel survey. Size distribution results from that survey are illustrated in Figure 9.

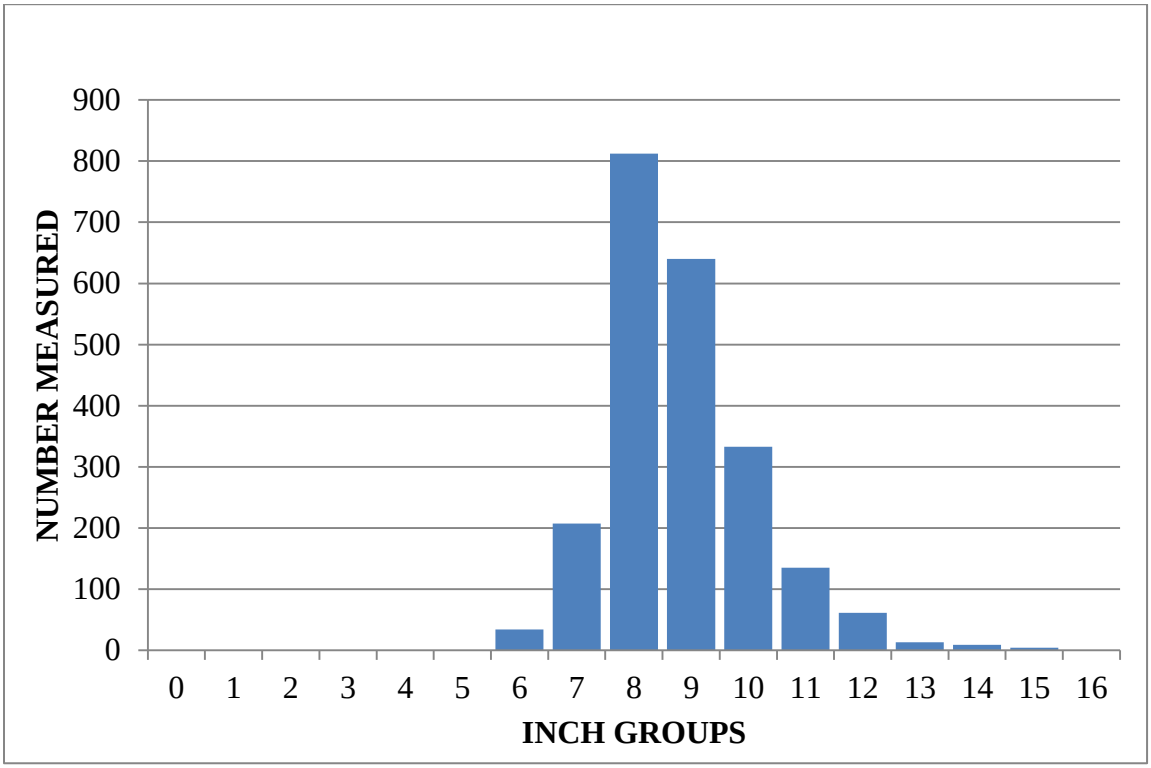

Figure 9. The size distribution (length groups) of angler harvested crappie measured during the creel survey at Sibley Lake, LA in 1995 (n = 2,248).

Most of the crappies caught by anglers were 8 to 10 inches TL. The minimum and maximum sizes were 6 and 15 inches TL. The median length for all crappies caught by crappie anglers was 9.0 inches TL.

Catfish

Channel catfish, *Ictalurus punctatus* and flathead catfish *Pylodictis olivaris* are found in this reservoir, with channel catfish being the most abundant species. Gillnetting results for the two species of catfish are shown in Figures 10 and 11.

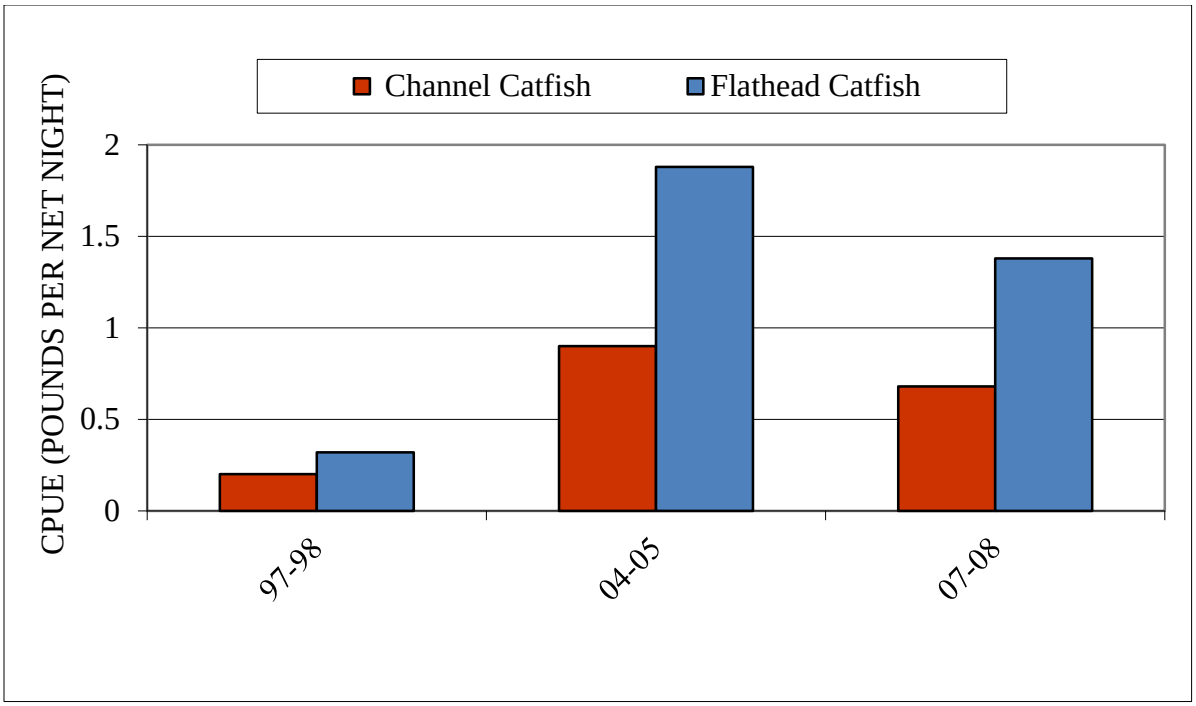

Figure 10. The total CPUE (pounds per net night) of channel catfish and flathead catfish collected in Sibley Lake, LA by gillnet sampling in 1997-1998, 2004-2005, and 2007-2008.

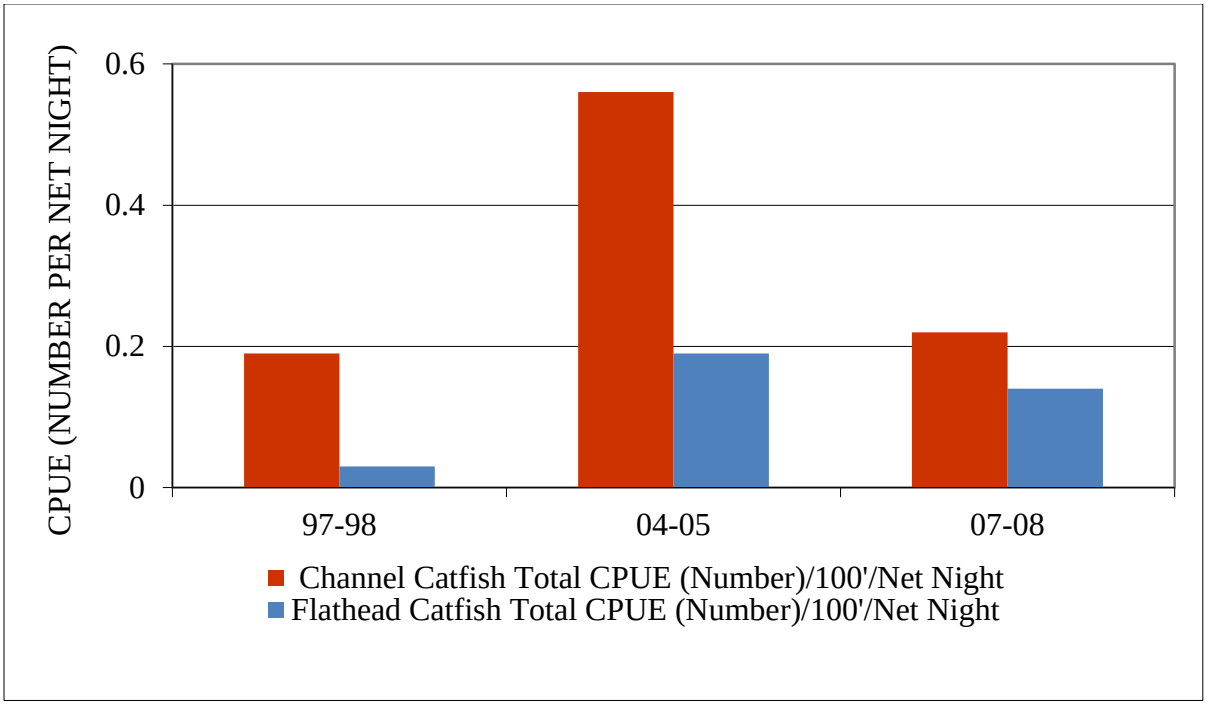

Figure 11. The total CPUE (number per net night) of channel catfish and flathead catfish collected in Sibley Lake, LA by gillnet sampling in 1997-1998, 2004-2005, and 2007-2008.

Forage

Forage fish are those that are available for use as food by predatory fishes. In general, all individuals up to six inches in length are forage fish, particularly when discussing forage for largemouth bass. Forage sampling conducted by electrofishing in the fall season 2013 resulted in 59.1 pounds per hour of forage fishes equal to or less than six inches in length. Figures 12 & 13 depict forage sample results from multiple years.

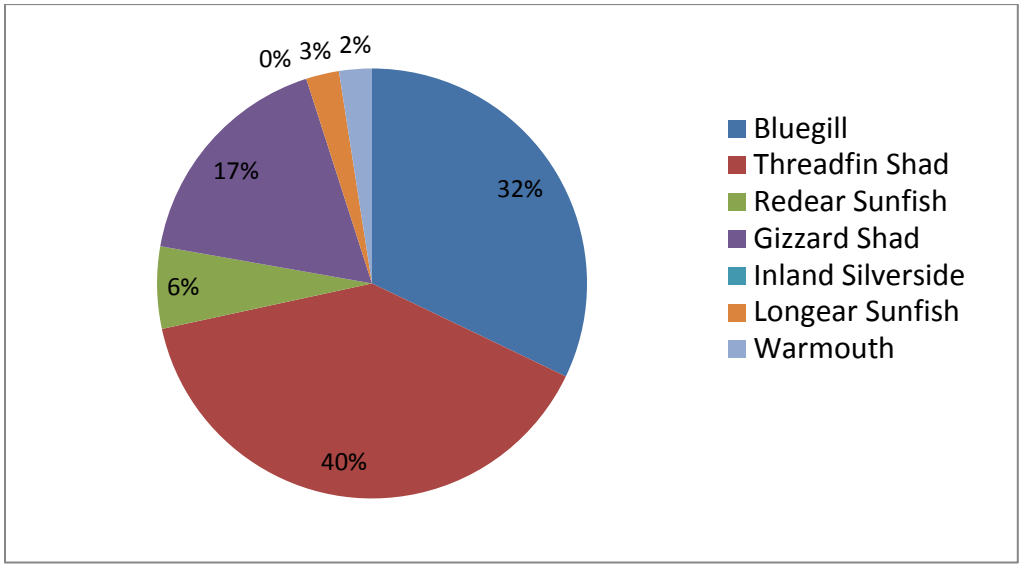

Figure 12. Forage fish by species collected during fall electrofishing at Sibley Lake, LA in 1990, 1994-1996 & 2013.

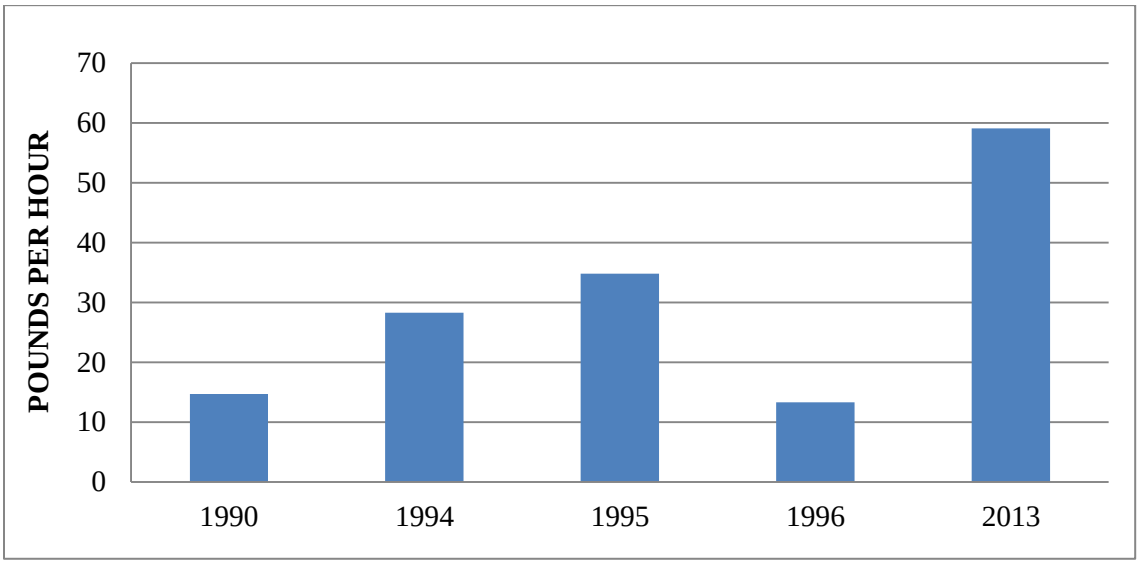

Figure 13. Forage fish collected per hour of fall electrofishing sampling at Sibley Lake, LA in 1990, 1994-1996 & 2013.

Commercial Species

Data collected with standardized gillnets is presented in the following graphs. Standardized gillnet sampling involves the use of 100 yards each of 2.5 inch, 3 inch, 3.5 inch and 4 inch bar mesh monofilament gill nets at each station.

Carp

While common carp (*Cyprinus carpio)* are not subject to species specific management, they are considered a commercial species. As such, they are managed to provide a sustainable population. Figure 14 depicts total CPUE of common carp collected in gillnets at Sibley Lake.

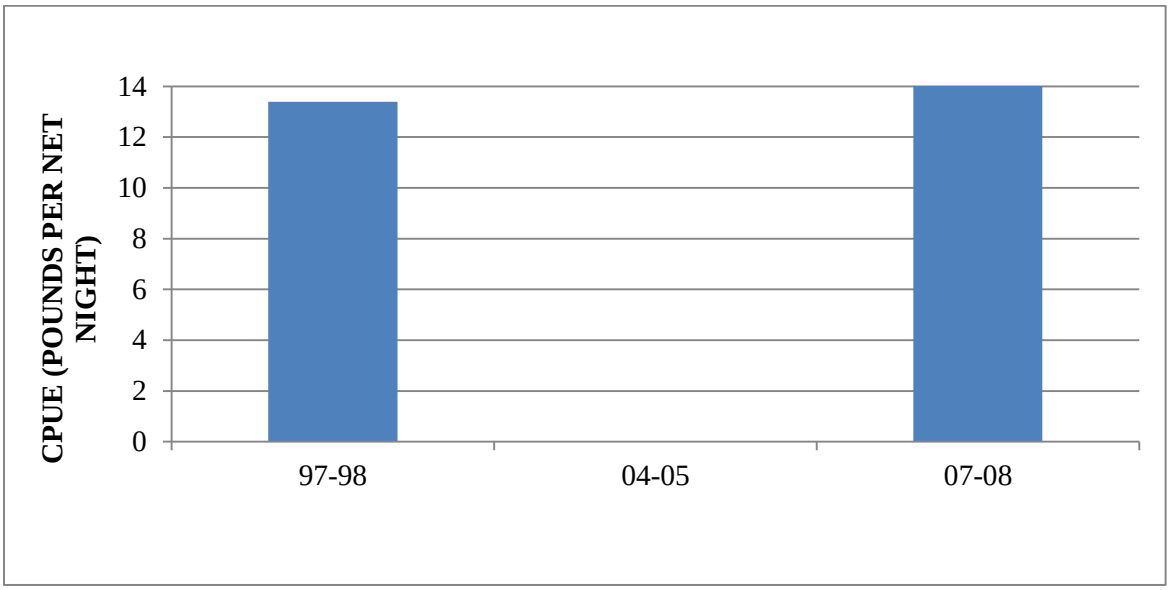

Figure 14. Total CPUE (pounds/100'/net night) of carp taken by gillnet sampling at Sibley Lake, LA during sampling periods 1997-1998, 2004 – 2005 & 2007 - 2008.

Catfish

All catfish species are managed to provide a sustainable population. Two major catfish species, channel catfish *Ictalurus punctatus* and flathead catfish *Pylodictis olivaris*, are found within the waterbody. Catch data from standardized gillnets for these species was presented in Figures 10 and 11.

Freshwater Drum

Freshwater drum *Aplodinotus grunniens* are occasionally collected during standardized sampling at this lake. Abundance of this species remains relatively low. Catch data from standardized gillnets is presented in Figure 15.

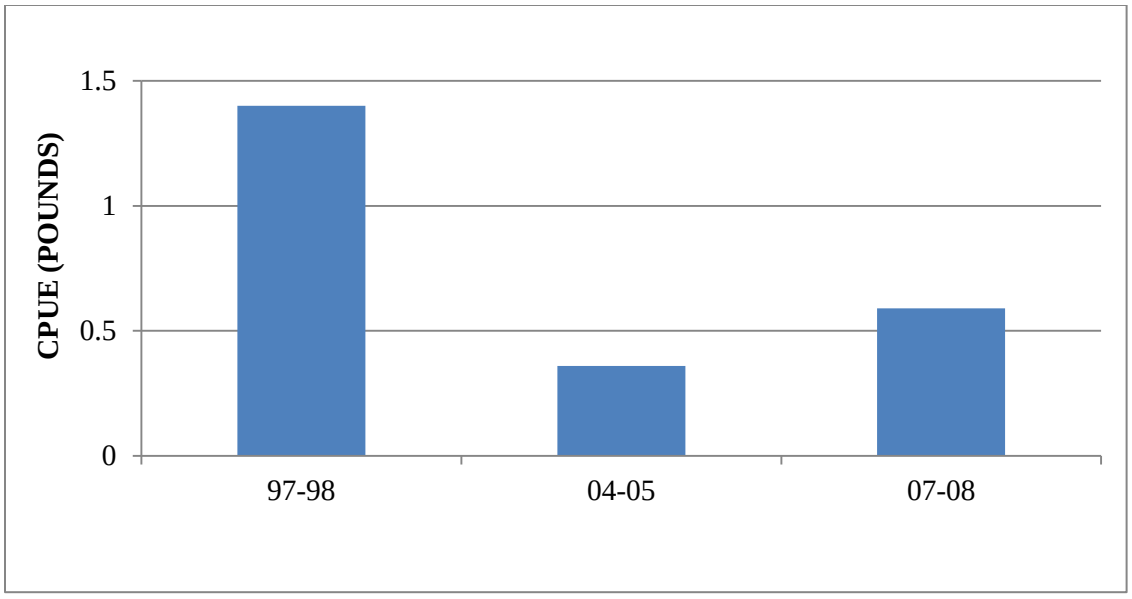

Figure 15. Total CPUE (pounds/100'/net night) of freshwater drum taken by gillnet sampling at Sibley Lake, LA during 1997-1998, 2004 – 2005 & 2007 - 2008.

Bowfin

Bowfin *Amia calva* is not a major commercial species in Sibley Lake. Bowfins are occasionally collected during standardized sampling. The CPUE for bowfins collected in gillnets is depicted in Figure 16.

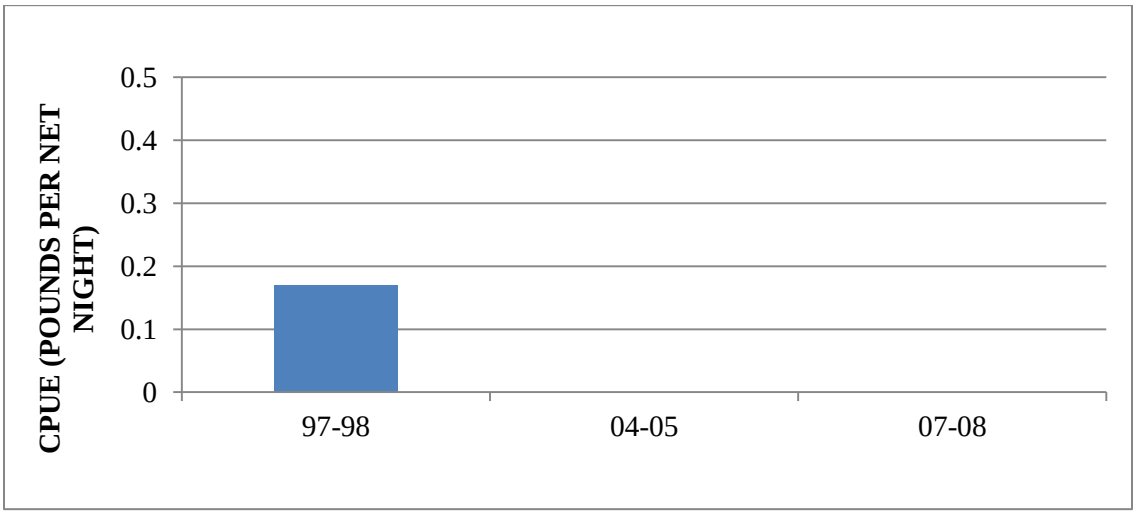

Figure 16. The total CPUE (pounds/100'/net night) of bowfin taken by gillnet sampling at Sibley Lake, LA during sampling periods 1997-1998, 2004 – 2005 & 2007 - 2008.

Garfish

Spotted gar *Lepisosteus oculatus* are the only species of garfish that occur in this reservoir. The CPUE for spotted gar collected in gillnets is depicted in Figure 17.

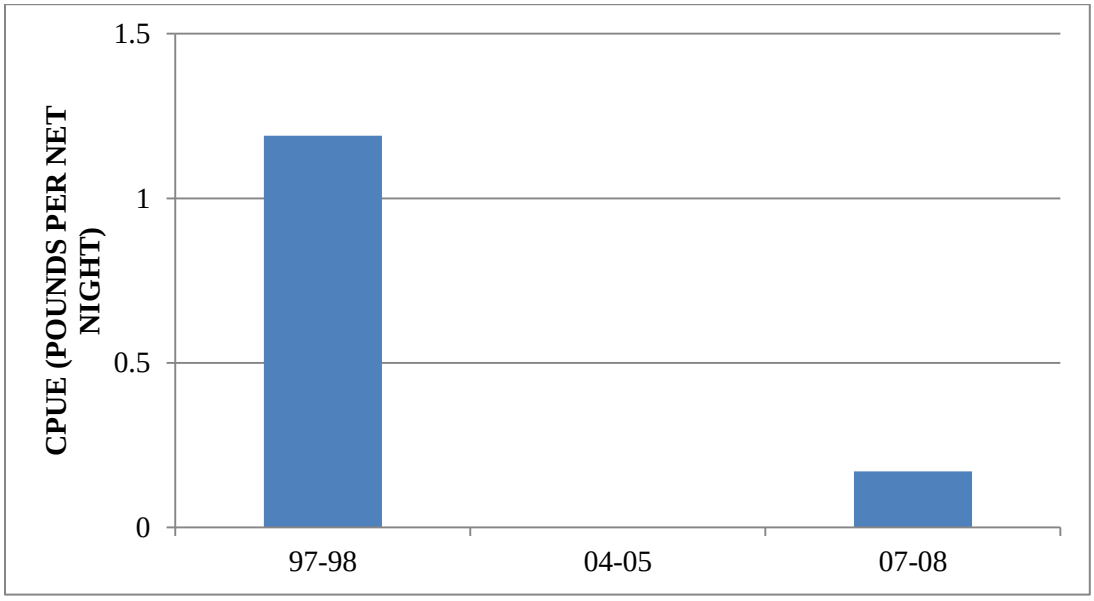

Figure 17. Total CPUE (pounds/100'/net night) of spotted gar taken by gillnet sampling at Sibley Lake, LA during 1997-1998, 2004 – 2005 & 2007 - 2008.

Species of Special Concern

No species of special concern are found in this lake.

HABITAT EVALUATION

Aquatic Vegetation

Hydrilla (*Hydrilla verticillata*) was discovered in Sibley Lake in January of 1973. Records indicate a subsequent five successive year drawdown regime that eradicated hydrilla from the lake at that time. Scattered specimens of hydrilla can currently be found in Sibley Lake but no treatments or control measures directed towards this plant species have been implemented by LDWF in recent years.

In 2008, common salvinia (*Salvinia minima*) and giant salvinia (*Salvinia molesta*) were first treated by LDWF spray crews. Giant salvinia has remained problematic since that time in isolated areas that are protected from wind and wave action.

In recent years, minor treatments were made for control of alligator weed (*Alternanthera philoxeroides*), American lotus (*Nelumbo lutea*), cutgrass (*Zizaniopsis miliacea*), common salvinia (*Salvinia minima*), giant salvinia (*Salvinia molesta*), water hyacinth (*Eichhornia crassipes*) and water lily (*Nymphaea spp*). Chemical treatments made at Sibley Lake for 2013 and 2014 are depicted in Table 5.

Table 5. Chemical treatments made by LDWF at Sibley Lake, LA in 2013 and 2014.

Treatment Year	Chemical	Vegetation	Acres Treated	Rate
2013	Aquamaster	American Lotus	20.4	0.75 gal./acre
	Aquamaster	Cutgrass	0.4	0.75 gal./acre
	Aquamaster	Giant Salvinia	134.77	0.75 gal./acre
	Roundup Custom	Giant Salvinia	84.0	0.75 gal./acre
	Sonar AS	Giant Salvinia	1.0	80ppb
	Tribune	Giant Salvinia	1.99	0.75 gal./acre
2014	None	None	None	None

Durable Natural Structure

Very little woody structure exists in this lake.

Substrate

Information from the Natural Resources Conservation Service shows that soils in the Sibley Lake watershed range from silt loam to sandy loam to various clay types. Soil pH values fall between 5 and 7.3 for the drainage area. Soil fertility is classified as moderate.

Artificial Structure

Eight artificial reef structures have been placed in this reservoir by LDWF. These structures are clusters of plastic feed pallet "trees" and are marked by yellow buoys. Location information for the eight reefs is given in Table 6.

Table 6. Location coordinates for artificial reef structures at Sibley Lake, LA.

Structure Number	Latitude	Longitude
1	N 31.770896°	W -93.129200°
2	N 31.759189°	W -93.111104°
3	N 31.753812°	W -93.129975°
4	N 31.752906°	W -93.115882°
5	N 31.753506°	W -93.111422°
6	N 31.766775°	W -93.126021°
7	N 31.769551°	W -93.109954°
8	N 31.764674°	W -93.108884°

CONDITION IMBALANCE / PROBLEM

Aquatic vegetation is sometimes problematic at Sibley Lake. Primary concerns are related to alligator weed (*Alternanthera philoxeroides*), American lotus (*Nelumbo lutea*), Cutgrass (*Zizaniopsis miliacea*), common salvinia (*Salvinia minima*), giant salvinia (*Salvinia molesta*), water hyacinth (*Eichhornia crassipes*) and water lily (*Nymphaea spp*).

CORRECTIVE ACTION NEEDED

LDWF will periodically assess aquatic vegetation in Sibley Lake by both physical survey and regular communication with the Sibley Lake Patrol. LDWF will respond appropriately based upon such assessments.

RECOMMENDATIONS

The Sibley Lake Patrol closely monitors this waterbody and communicates well with LDWF when problems arise regarding aquatic vegetation.

The Sibley Lake Patrol has purchased herbicide and spray equipment including a surface drive boat for control of aquatic vegetation at this lake. The program that the patrol has in place has provided adequate vegetation control in 2013 and early 2014. LDWF has cooperated with the patrol by serving in an advisory role with respect to herbicide and equipment selection. LDWF has provided personnel, equipment and chemicals for spot treatments in response to requests from the patrol.

LDWF will continue to maintain a good line of communication with the Sibley Lake Patrol regarding aquatic plants on this lake. Additionally, LDWF staff will make observations of aquatic plant coverage during routine fisheries sampling on the lake. LDWF will respond appropriately with spot treatments of foliar herbicides as a first line of action for the treatment of floating and emergent vegetation upon requests for assistance made by the Sibley Lake Patrol.

Alligator weed in undeveloped shoreline areas will be treated with foliar applications of imazapyr (0.5 gal/acre) and Turbulence (0.25gal/acre) surfactant. Alligator weed in developed shoreline areas will be treated with foliar applications of imazamox (Clearcast, 0.5 gal/acre) and Turbulence (0.25 gal/acre) surfactant.

Water hyacinth will be treated with foliar applications of glyphosate (0.75 gal/acre) and a non-ionic surfactant (0.25 gal/acre) from March 15 to September 15. Water hyacinth will be treated with foliar applications of 2,4-D (0.5 gal/acre) and a non-ionic surfactant (1 pint/acre) from September 16 to March 14.

Giant and/or common salvinia will be treated with foliar applications of glyphosate (0.75 gal/acre) and diquat (0.25 gal/acre) with Aqua King Plus (0.25 gal/acre) and Air Cover (12 oz/acre) surfactants from April 1 - October 31. Giant and/or common salvinia will be treated with foliar applications of diquat (0.75 gal/acre) and a non-ionic surfactant (0.25 gal/acre) from November 1 – March 31.

Submerged aquatic vegetation will be controlled in response to requests from the Sibley Lake Patrol. It is recommended that the patrol use endothall at 2 ppm for submerged aquatic vegetation control if that need arises.

Continue standardized sampling to monitor fish population status.